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Phase turbulence in the Complex Ginzburg-Landau equation, a rigorous approach

We examine in a rigorous point of view the relationship between the solution of the Kuramoto-Sivashinsky equation and the phase of the solution of the Complex Ginzburg-Landau equation in the so-called Benjamin-Feir weakly unstable regime. These are shown to be 'close' on increasing time intervals as one approaches the BF line. Precise meaning of 'close', estimation of the time interval as well as results on the global (in time) Cauchy problem for CGL are given.